

REMARKS

Claims 1-27, 32-40 and 42-56 are pending in the above-captioned patent application after this amendment. Claims 4-7, 10, 12-15, 22, 23, 28-31, 34 and 37 were found to contain allowable subject matter. Claims 1-3, 8, 9, 11, 16-21, 24-27, 32, 33, 35, 36 and 38-41 have been rejected. The drawings have been objected to, and the specification has been objected to as containing informalities. Claims 1, 4-6, 18, 22, 32, 34 and 37 have been amended to clarify what the applicants regard as the invention, claims 28-31 and 41 have been canceled without prejudice and claims 42-56 have been added by this amendment for the purpose of expediting the patent application process in a manner consistent with the goals of the Patent Office pursuant to 65 Fed. Reg. 54603 (September 8, 2000), even though the applicants believe that the previously pending claims were allowable.

Pursuant to the request of the Patent Office, Figure 1 of the drawings has been amended to include reference numeral "78" as part of the left X guide mover 48A, which was omitted from original Figure 1. Further, various reference numerals have been repositioned for convenience only. Support for the amendments to the drawings can be found at least in the specification at page 9, lines 5-15.

Further, pursuant to the request of the Patent Office, the specification has been amended at page 7, line 17. Support for the amendment to the specification can be found at least in the drawings in Figure 1.

Support for the amendments to the claims and for the new claims can be found throughout the originally filed application, including the originally filed claims, the drawings and the specification. More specifically, support for the amendments to claims 1, 4-6, 18, 32, 34 and 37 can be found at least in Figures 1-4, 6A, 7 and 8A, in claims 1-17, and in the specification at page 5, lines 7-13, at page 8, lines 4-24, at page 8, line 33 through page 9, line 15, and at page 11, line 9 through page 24, line 3.

Further, new claim 42 is based on original claim 4 rewritten in independent form. Therefore, new claim 42 is not narrower in scope than previously pending claim 4. Claim 4 was found to contain patentable subject matter. Thus, claim 42 is believed to be patentable. Because new claims 43-45 depend directly or indirectly from claim 42, they are also believed to be patentable.

New claim 46 is based on original claim 10 rewritten in independent form. Therefore, new claim 46 is not narrower in scope than previously pending claim 10. Claim 10 was found to contain patentable subject matter. Thus, claim 46 is believed to be patentable.

New claim 47 is based on original claim 12 rewritten in independent form. Therefore, new claim 47 is not narrower in scope than previously pending claim 12. Claim 12 was found to contain patentable subject matter. Thus, claim 47 is believed to be patentable. Because new claim 48 depends from claim 47, it is also believed to be patentable.

New claim 49 is based on original claim 14 rewritten in independent form. Therefore, new claim 49 is not narrower in scope than previously pending claim 14. Claim 14 was found to contain patentable subject matter. Thus, claim 49 is believed to be patentable. Because new claim 50 depends from claim 49, it is also believed to be patentable.

New claim 51 is based on original claim 22 rewritten in independent form. Therefore, new claim 51 is not narrower in scope than previously pending claim 22. Claim 22 was found to contain patentable subject matter. Thus, claim 51 is believed to be patentable. Because new claim 52 depends from claim 51, it is also believed to be patentable.

New claim 53 is based on original claim 28 rewritten in independent form. Therefore, new claim 53 is not narrower in scope than previously pending claim 28. Claim 28 was found to contain patentable subject matter. Thus, claim 53 is believed to be patentable. Because new claim 54 depends from claim 53, it is also believed to be patentable.

New claim 55 is based on original claim 30 rewritten in independent form. Therefore, new claim 55 is not narrower in scope than previously pending claim 30. Claim 30 was found to contain patentable subject matter. Thus, claim 55 is believed to be patentable. Because new claim 56 depends from claim 55, it is also believed to be patentable.

No new matter is believed to have been added by this amendment. Consideration of the pending application is respectfully requested.

Information Disclosure Statements

The applicants filed an Information Disclosure Statement on April 25, 2001, including Form PTO 1449 (modified). However, the applicants note that this Information Disclosure Statement has not been formally acknowledged by the Patent Office, nor has the Form PTO 1449 (modified) been initialed by the Examiner and provided to the applicants. Therefore, a duplicate copy of the Information Disclosure Statement dated April 25, 2001 is provided herewith, including a copy of the original return receipt postcard indicating receipt by the Patent Office on April 30, 2001. No fee is believed to be necessary because the Information Disclosure Statement was timely filed. Additionally, a Supplemental Information Disclosure Statement is also being filed concurrently herewith.

Objections to the Drawings

The Examiner has objected to the drawings because "the description on page 6, lines 20 and 21 and Figure 1 do not seem to correspond to each other. It is not clear which structure is referenced by numbers 48A and 48B. It is not clear why 48B has two components while 48A only has one component. The description of stage mover assembly 16, and drawings representing the stage mover assembly are not clear."

The applicants have submitted herewith an amended Figure 1 which is believed to overcome the objection of the Patent Office. Please approve of the amendments to Figure 1 as illustrated in the accompanying drawing. A separate letter to Draftsman is attached hereto requesting approval of the amendment to Figure 1.

Objection to the Specification

The specification has been objected to because of the following informalities: "The description of stage mover assembly 16, and drawings representing the stage mover assembly are not clear. According to the written description on page 7, line 17, the guide assembly 46 moves the mover housing along the X axis, but Figure 1 seems to indicate that the guide assembly moves the housing along the Y axis."

As provided above, the specification has been amended, and is believed to overcome the objection by the Patent Office.

Rejections Under 35 U.S.C. § 102(b)

Claims 1-3, 11, 16-21, 24-27, 32, 33, 35, 36 and 38-41 are rejected under 35 U.S.C. §102(e) as being anticipated by Tokuda et al. (Tokuda) (US 6,493,062). The applicants have canceled claim 41 without prejudice by this amendment. Thus, the rejection of claim 41 is believed to be moot. Further, the applicants have amended base claims 1, 18 and 32, and dependent claim 32, and these claims as amended are believed to have overcome the rejection of the Patent Office relative to claims 1-3, 11, 16-21, 24-27, 32, 33, 35, 36 and 38-40 as set forth below.

The Examiner contends that Tokuda discloses “a device stage and a method of making a device stage assembly that moves a device (6) relative to a mounting base (1), the device stage assembly comprising a device stage that retains the device (33), a mover housing (2), a support assembly that moves the device stage relative to the mover housing, the support assembly including at least four, spaced apart Z device stage movers (38) that are connected to the device stage and a control system (30) that controls the X device stage movers to inhibit vibration which causes deformation of the device stage using a feedforward control by monitoring the movement of the stage (col. 13, lines 16-36). Tokuda’s invention also inhibit dynamic deformation caused by repulsive force due to step and scan exposure, and the static deformation caused every time wafer and reticle stages move (col. 1, lines 27-36). Tokuda also discloses an exposure apparatus with an irradiation apparatus (Fig. 1 and 2) including the device stage assembly. Tokuda further discloses the device or a wafer manufactured with the exposure apparatus (Fig. 5 and 6). Tokuda also discloses the method of determining a driving force that inhibits deformation and providing the driving force to the stage to cause the movement of the stage (col. 13, lines 16-56).”

The applicants respectfully submit that Tokuda does not teach or suggest the features of rejected claims 1-3, 11, 16-21, 24-27, 32, 33, 35, 36 and 38-40 as amended. For example, the Examiner analogizes the base frame 2 disclosed in Tokuda with the mover housing disclosed in the present application. Further, the Examiner analogizes the stage base member 33 with the device stage disclosed in the present application. The applicants respectfully disagree that these structures are analogous. For instance, the

stage base member 33 does not retain a device.

Regardless, for the sake of argument, Tokuda still does not teach or suggest the features of rejected claims 32, 33, 35, 36 and 38-40. For example, Tokuda does not teach or suggest the base frame 2 and the stage base member 33 moving relative to a mounting base. Moreover, Tokuda does not teach or suggest a support assembly that moves the device stage along an axis that is perpendicular to the mounting base.

In contrast, amended claim 1 is directed toward a “device stage assembly ... comprising: a device stage that retains the device, the device stage being movable relative to a surface of the mounting base; a mover housing that is movable relative to the surface of the mounting base; a support assembly that moves the device stage relative to the mover housing along a Z axis that is perpendicular to the surface of the mounting base, the support assembly including at least four, spaced apart Z device stage movers that are connected to the device stage; and a control system that controls the Z device stage movers to inhibit deformation of the device stage during movement of the device stage by the Z device stage movers.” These features are not taught or suggested by the cited reference. Thus, amended claim 1 is believed to be patentable. Because claims 2-17 depend directly or indirectly from claim 1, they are likewise believed to be patentable.

Further, amended claim 18 is directed toward a “support assembly ... comprising: a plurality of spaced apart Z stage movers that are connected to the stage; a sensor coupled to the stage to monitor the bending of the stage; and a control system that controls the Z stage movers to move the stage in accordance with an output of the sensor while inhibiting dynamic bending of the stage during movement of the stage by the Z stage movers.” These features are not taught or suggested by the cited reference. Thus, amended claim 18 is believed to be patentable. Because claims 19-27 depend directly or indirectly from claim 18, they are likewise believed to be patentable.

In further distinction to Tokuda, claim 32 of the present application is directed toward a method for making a device stage assembly that requires the steps of “providing a device stage that retains the device, the device stage being movable relative to a surface of the stage base; providing a mover housing that is movable relative to the surface of the stage base with the device stage; connecting a support assembly between the device stage and the mover housing, the support assembly including a plurality of spaced apart Z device stage movers that move the device stage relative to the mover housing along a Z axis that is perpendicular to the surface of the stage base; and connecting a controller with the plurality of spaced apart Z device stage movers, the controller controlling the Z device stage movers to inhibit dynamic bending of the device stage during movement of the device stage by the Z device stage movers.” These features are not taught or suggested by Tokuda. Thus, claim 32 is believed to be patentable. Because claims 33-40 depend directly or indirectly from claim 32, they are likewise believed to be patentable.

Accordingly, the applicants respectfully submit that the rejection of claims 1-3, 11, 16-21, 24-27, 32, 33, 35, 36 and 38-40 be withdrawn, and that these claims be allowed.

Rejections Under 35 U.S.C. § 103

Claims 8, 9 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Tokuda et al. (Tokuda) in view of Yonekawa et al. (Yonekawa) (US 6,330,052). Further, claims 16, 17, 26, and 27 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Iwamoto. As provided above, because base claim 1 is believed to be patentable, dependent claims 8, 9, 16 and 17 are also believed to be patentable. Additionally, because base claim 18 is considered to be patentable, dependent claims 26 and 27 are likewise considered to be patentable.

Allowable Subject Matter / New claims

Claims 4-7, 10, 12-15, 22, 23, 28-31, 34, and 37 were found to contain patentable subject matter. As provided above, new claim 42 is based on original claim 4 rewritten in independent form. Claim 4 was found to contain patentable subject matter. Thus, claim

42 is believed to be patentable. Because new claims 43-45 depend directly or indirectly from claim 42, they are also believed to be patentable.

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New claim 51 is based on original claim 22 rewritten in independent form. Claim 22 was found to contain patentable subject matter. Thus, claim 51 is believed to be patentable. Because new claim 52 depends from claim 51, it is also believed to be patentable.

New claim 53 is based on original claim 28 rewritten in independent form. Claim 28 was found to contain patentable subject matter. Thus, claim 53 is believed to be patentable. Because new claim 54 depends from claim 53, it is also believed to be patentable.

New claim 55 is based on original claim 30 rewritten in independent form. Claim 30 was found to contain patentable subject matter. Thus, claim 55 is believed to be patentable. Because new claim 56 depends from claim 55, it is also believed to be patentable.

Remaining References

The references cited by the Examiner, but not relied on for the rejection of claims, have been noted. The remaining references are no more pertinent than the applied references, therefore, a detailed discussion of these remaining references is deemed unnecessary for a full and complete response to the Office Action.

Conclusion

In conclusion, Applicant respectfully asserts that claims 1-27, 32-40 and 42-56 are patentable for the reasons set forth above, and that the application is now in a condition for allowance. Accordingly, an early notice of allowance is respectfully requested. The Examiner is requested to call the undersigned at 858-456-1951 for any reason that would advance the instant application to issue.

Dated this 24th day of June, 2003.

Respectfully submitted,



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